

# HEAVY CONSTRUCTION EQUIPMENT MECHANIC, PRE-APPRENTICE

A student who has completed the Job Corps Heavy Construction Equipment Mechanic program is equipped with the skills to contribute to the workplace as a valued employee from day one. Competence in academic and vocational skills is required for graduation. In addition, Job Corps students learn employability and technological skills. To complete his or her Heavy Construction Equipment Mechanic training, a student must master skills in these categories:

## **SAFETY**

Complete safety orientation; demonstrate an awareness of potential hazards when working with all types of equipment, power and hand tools and chemicals; wear proper safety clothing on the job site including personal protective equipment; follow prescribed procedures with closed pressurized systems (water, hydraulic, etc.); follow specified procedures for safe handling/storage of hazardous chemicals, compounds, combustible/flammable materials, etc.; comply with OSHA HAZMAT regulations where applicable; demonstrate the ability to locate Material Safety Data Sheets (MSDS) and know their purpose; demonstrate the ability to follow fire safety rules; demonstrate the ability to inspect tools for wear and/or malfunction; demonstrate the ability to use tools and equipment only for the purpose intended and out of the path of other workers; identify the locations of all first aid equipment and materials.

## **PRECISION MEASURING TOOLS**

Identify, properly use and maintain precision measuring tools.

## **BEARINGS AND SEALS**

Remove and install bearings and seals.

## **FUEL SYSTEMS**

Remove and install injectors; remove and install fuel pump.

## **AIR INTAKE SYSTEMS**

Identify air intake components and describe their function; safely remove and install turbo chargers, intake manifolds and tubes.

## **EXHAUST SYSTEMS**

Identify exhaust system parts and describe their functions; safely remove and install exhaust pipes, mufflers and manifolds.

## **COOLING SYSTEMS**

Safely remove and replace water pumps, water manifolds, thermostats, hoses, fittings and belts; safely remove, install and externally inspect radiators.

## **ELECTRICAL SYSTEMS**

Identify electrical system parts and their functions; safely use basic electrical testing equipment; safely remove and install electrical components, including starters, alternators, gauges, wires, etc.

## **DIESEL ENGINE**

Complete diesel engine orientation; identify the parts of a diesel engine.

## **BLADES, BUCKETS, ETC.**

Safely inspect, remove and install cutting edges, pins, arms, etc.

**CABLE**

Determine size and inspect cable for damage and wear.

**DRIVE LINES AND UNIVERSAL JOINTS**

Inspect, remove and install drive lines and universal joints.

**WELDING, CUTTING, BRAZING AND SOLDERING**

Safely adjust oxygen and acetylene gauges; safely light and adjust a torch; safely perform cutting procedures; safely perform brazing and soldering procedures; safely perform arc welding procedures.

**HYDRAULICS**

Demonstrate proper procedures to neutralize operating pressures before servicing equipment; safely check fluid levels and service hydraulic systems; identify hydraulic components; safely remove and install lines, fittings and pumps; safely remove and replace valve bodies; safely repair hydraulic cylinders.

**AIR BRAKE SYSTEMS**

Perform preventive maintenance service of air systems; safely remove and install air lines, fittings, valves and air compressors.

**STEERING**

Safely remove and replace lines, fittings, linkages, pumps, etc.

**BRAKES**

Perform visual and physical brake inspections.

**TRANSMISSIONS**

Check oil levels and service transmissions; adjust linkages; remove and install transmission lines, fittings, pumps, valve bodies, etc.; remove and install transmissions.

**TORQUE CONVERTERS**

Replace lines and fittings; remove and install torque converters.

**STEERING CLUTCHES**

Adjust steering clutches; remove and install steering clutches.

**DIFFERENTIALS**

Inspect and service differentials; remove and install differentials.

**FINAL DRIVES**

Remove and install covers, gears, bearings and seals.

**UNDERCARRIAGE**

Perform inspection for wear, loose parts, bolts, etc.; perform track adjustment; remove and install pad to rail; safely remove and reinstall track; remove and replace sprockets, sprocket segments, rollers, idlers and covers.